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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,020	12/15/2003	Guo Liu	SMBZ 2 01016 6865-312	4169

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James W. McKee  
Fay, Sharpe, Fagan  
Minnich & McKee, LLP, 7th Floor  
1100 Superior Avenue  
Cleveland, OH 44114-2518

EXAMINER
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THOMPSON, CAMIE S

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 11/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/736,020

Applicant(s)

LIU, GUO

Examiner

Camie S. Thompson

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1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,5,9,10,20,23 and 25 is/are rejected.
- 7) ☒ Claim(s) 2-8,11-19,21,22 and 24-31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/10/04, 5/13/04
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. Claims 1, 20, 23 and 25 are objected to because of the following informalities:

Claim 1: Delete the colon following the phrase “selected from the group consisting of”.

Delete the “-“ preceding the term “wherein”.

Claim 20: Delete the semi-colon following the term “comprising” and insert a colon.

Delete the “-“ preceding the phrase “ a phosphor thin film layer selected from the group consisting of”.

Delete the “-“ preceding the phrase “an aluminum nitride layer provided directly adjacent a top and/or bottom side of the phosphor layer”

Claim 23: Delete the semi-color following the phrase “a phosphor selected from the group consisting of” and insert a colon.

Delete the “-“ preceding the term “wherein”.

Claim 25: Delete the semi-colon following the phrase “deposition of a phosphor selected from the group consisting of” and insert a colon.

Delete “iii)” preceding the phrase “deposition of a layer of aluminum nitride on top of said phosphor film of (a)-(e):” and insert – ii) -.

Delete the “ii)” preceding the phrase “annealing said phosphor film at a temperature of up to about 1100°C and insert – iii) - .

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 5, 9-10, 20, 23 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Steckl et al., U.S. Pre Grant Publication 2002/0125821.

Steckl discloses a thick film dielectric electroluminescent display formed on a glass substrate comprising a phosphor such as ZnS:Mn as per instant claims 1, 20, 23 and 25(see Figure 4 and paragraph 0026). Additionally, the reference discloses a protective barrier such as aluminum nitride that is sputtered onto the phosphor layer (see paragraph 0026). Also, paragraph 0026 of the reference discloses that the structure is sputtered at room temperature and annealed at or above the sintering temperature of the thick film dielectric layer as per instant claims 9 and 25.

Claims 9-10 are product-by-process claims. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though a different process made the prior product. See MPEP 2113. Both Steckl and applicant have a protective barrier comprising aluminum nitride on top of a phosphor layer comprising ZnS:Mn. The process of applying the

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protective barrier onto the phosphor layer does not make the structure of the aluminum nitride layer on top of the phosphor layer different.

4. Claims 2-8, 11-19, 21-22 and 24-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not provide for an improved phosphor film for a thick film dielectric electroluminescent display, said phosphor film selected from the group consisting of

- (a) a rare earth activated barium thioaluminate;
- (b) a rare earth activated fine grained zinc sulfide;
- (d) a rare earth or transition metal activated zinc selenide; and
- (e) a rare earth or transition metal activated zinc sulfo-selenide,

wherein said phosphor film of (a), (b), (d) and (e) is provided with an aluminum nitride barrier layer on a top and/or bottom side of the phosphor film, said aluminum nitride barrier layer improving the stability of the interface between the phosphor film and the display.

Additionally, the prior art does not provide for a phosphor laminate for use in a thick film dielectric electroluminescent display, said phosphor laminate comprising:

a phosphor thin film layer selected from the group consisting of

- a) a rare earth activated barium thioaluminate;
- (b) a rare earth activated fine grained zinc sulfide;
- (d) a rare earth or transition metal activated zinc selenide; and
- (e) a rare earth or transition metal activated zinc sulfo-selenide,

wherein said phosphor film of (a), (b), (d) and (e) is provided with an aluminum nitride barrier layer on a top and/or bottom side of the phosphor film, said aluminum nitride barrier layer improving the stability of the interface between the phosphor film and the display.

The prior art does not provide for a thick film dielectric electroluminescent device constructed on a glass or glass ceramic substrate and comprising a phosphor selected from the group consisting of

- a) a rare earth activated barium thioaluminate;
- (b) a rare earth activated fine grained zinc sulfide;
- (d) a rare earth or transition metal activated zinc selenide; and
- (e) a rare earth or transition metal activated zinc sulfo-selenide,

wherein said phosphor film of (a), (b), (d) and (e) is provided with an aluminum nitride barrier layer on a top and/or bottom side of the phosphor film, said aluminum nitride barrier layer improving the stability of the interface between the phosphor film and the display.

The prior art does not provide for a method for making a stabilized phosphor laminate for use in a thick film dielectric electroluminescent device, said method comprising:

- i) deposition of a phosphor selected from the group consisting of
  - a) a rare earth activated barium thioaluminate;
  - (b) a rare earth activated fine grained zinc sulfide;
  - (d) a rare earth or transition metal activated zinc selenide; and
  - (e) a rare earth or transition metal activated zinc sulfo-selenide,

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onto a glass or glass ceramic substrate incorporating a first set of address lines and a dielectric layer;

ii) deposition of a layer of aluminum nitride on top of said phosphor film of (a)-(b) and (d)-(e); and

iii) annealing said phosphor film at a temperature of up to about 1100°C.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Camie S. Thompson whose telephone number is (571) 272-1530. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena L Dye, can be reached at (571) 272-3186. The fax phone number for the Group is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



RENA DYE

SUPERVISORY PATENT EXAMINER

A.U. 1774 11/7/05